

TEST 2
STAT 572
Spring 1996

Name _____

Instructions: Be concise and clear in your answers. If you are spending too much time in calculations, you are probably missing something. Show work for partial credit.

An auto-industry expert is interested in how various characteristics of cars are related to the number of cars sold. To investigate this, base model prices of 48 types of cars were collected from the April 1989 issue of *Consumer's Reports*. Part of the information collected was:

LOGSALES:	logarithm of number of units sold in 1988.
PRICE:	price of base model
MPG:	miles per gallon
SIZE:	number of passengers

A regression model was fitted to these data. The results appear in the following pages.

a) Comment on the overall fit of the model. (10 p)

b) Test the significance of the simple correlation between mpg and logsales. (10 p)

c) Compare the significance of mpg in b) with the one in the full model. Explain the difference. (10 p)

d) Determine the influence of the two observations with the highest leverage. Interpret the values of DFBETAS. (5 p)

The cars were categorized into five groups according to their manufacturer: FORD (1), GM (2), JAPANESE (3), CHRYSLER (4), and EUROPE (5).

e) Explain how this information can be included in the model. Be complete. (5 p)

f) The results after the manufacturer information was added to the model appear in the next page. Compare the results with the previous model and explain the differences (i.e. why is it that this model predicts the response better?) (5 p)

g) Order the manufacturers from highest to lowest in terms of their average logsales. (5 p)